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SCIENCE SPOTLIGHT

Higher Omega-3 Fatty Acid Intake May Help Reduce Mortality Risk

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Long-chain omega-3 polyunsaturated fatty acids, primarily consumed through fatty fish in the diet, are increasingly being consumed as fish oil supplements. Research finding that these fatty acids have anti-inflammatory properties has driven interest in their potential use for primary prevention of inflammation-related diseases. While previous evidence suggests that omega-3 intake may lead to reduced mortality from chronic diseases, epidemiologic evidence is mixed. Mr. Griffith Bel and colleagues in the Public Health Sciences division, under the direction of Dr. Emily White, investigated whether omega-3 intake from diet and supplements is associated with cause-specific and total mortality. As recently reported in the *American Journal of Epidemiology*, their results suggest that intake of long-chain omega-3 fatty acids may reduce risk of total and cancer-specific mortality.

To investigate this question the authors utilized data from the Vitamins and Lifestyle (VITAL) study, a large cohort study of over 70,000 Washington State residents. Participants completed food frequency questionnaires in 2000-2002, and were followed up for mortality outcomes through 2006. A major strength of this study is that both dietary and supplemental sources of omega-3 fatty acid intake were measured, rather than one or the other, to evaluate an association with mortality. "Other studies have examined the effect of more omega-3 in the diet or in a supplement," said lead author Bell, "but I think our study captures people's exposure to these substances in a more holistic way."

Overall, the authors found that a higher combined dietary and supplemental omega-3 intake was associated with decreased overall and cancer-specific mortality (see figure). Compared to the lowest quartile of intake, those in the highest quartile had an 18% reduced risk of mortality from all causes (p -trend = 0.001). Similarly, those in the highest quartile of intake also had a 23% reduced risk of mortality from cancer (p -trend = 0.006). In contrast to previous studies, no significant association was observed with cardiovascular disease mortality, though a 13% non-significant reduction in risk was observed (p -trend = 0.158). These relationships were not substantially altered by sensitivity analyses.

These findings add further evidence of the potential benefit of omega-3 intake, but additional research will be needed to confirm them. Previous randomized trials of omega-3 supplements and total mortality have been inconsistent. Studies of omega-3 intake in cancer have generally examined incidence of specific cancers rather than total cancer mortality, and have reported both benefits and risks. "There is currently some debate about the safety and efficacy of omega-3 fatty acids, and the story of these substances may be more complicated than originally thought," said Bell.

Despite these inconsistencies, the authors are excited to continue exploring the potential impacts of omega-3 intake within the VITAL study. Specifically designed to ascertain supplement use, the study is a vital ongoing resource to investigating associations with combined dietary and supplemental sources. Indeed, "this integrated approach wouldn't have been possible without Dr. White's remarkable expertise and prescience in designing the VITAL study 15 years ago," said Bell. Together with other ongoing studies, the authors plan to continue working towards identifying whether omega-3 fatty acids intake is truly beneficial for reducing mortality risk.

Other PHS investigators contributing to this project were Drs. Elizabeth Kantor, Johanna Lampe, and Alan Kristal.

[Bell GA, Kantor ED, Lampe JW, Kristal AR, Heckbert SR, White E](#). 2014. Intake of long-chain omega-3 fatty acids from diet and supplements in relation to mortality. *Am J Epidemiol*. 179(6):710-20.

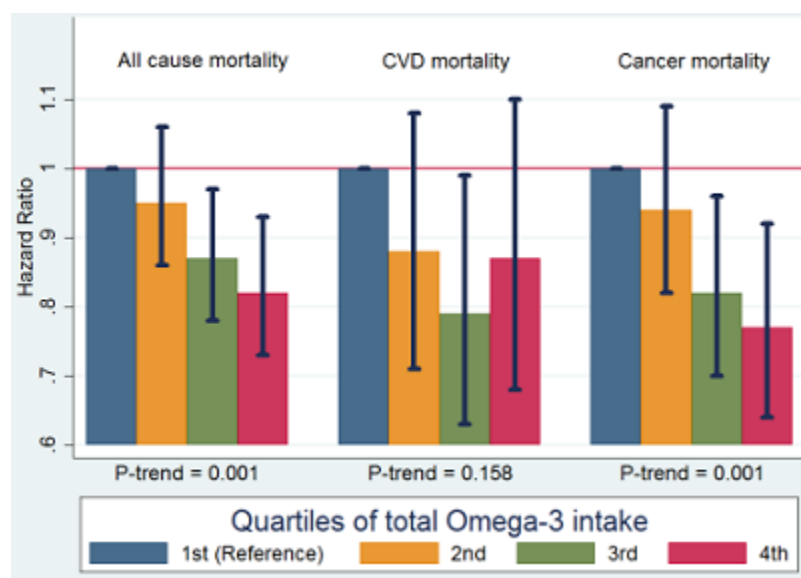


Image provided by Dr. Jonathan Kocarnik

Hazard ratios for mortality associated with quartiles of total omega-3 fatty acid intake (diet and supplements), by mortality outcome.